A TAXONOMIC STUDY OF THE SPECIES OF LEGUMINOUS PLANTS IN ILLINOIS

BY

WILLIAM GRAY GAMBILL, JR.

A.B., University of Colorado, 1936
A.M., University of Colorado, 1937

AN ABSTRACT OF A THESIS

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF DOCTOR OF PHILOSOPHY IN BOTANY
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UNIVERSITY OF ILLINOIS, 1947

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A TAXONOMIC STUDY OF THE SPECIES OF LEGUMINOUS PLANTS OF ILLINOIS

The principal aim of this study is to present an accurate and concise account of the leguminous plants growing without cultivation in Illinois, with keys for their identification and maps of their distribution by counties within the state. This investigation has been carried on in two phases, the first being an extensive survey of the literature pertaining to Illinois plants; and the second, an examination of collections of leguminous plants, chiefly those in the herbarium of the University of Illinois. In certain genera, specimens from the Herbaria of the Arnold Arboretum, the Chicago Museum of Natural History, and the Illinois State Natural History Survey have been studied.

An attempt is made to apply to each species the binomial which is valid according to the *International Rules of Botanical Nomenclature* (1935). Only those synonyms are listed which have the relationship of basinyms to the accepted binomials, or under which the plant previously has been recorded from Illinois. The common name listed for each species is usually that suggested in *Standardized Plant Names* (1942), but in some instances, names which seem more suitable have been used.

A brief summary of the known history in Illinois of each species is provided in the form of a list of authors, with the dates and page numbers of their publications in which the plant has been attributed to Illinois. It has been possible for the writer to examine over ninety per cent of the collected specimens upon which these authors based their records. For most of the species, the type locality is quoted directly from the original publication. The known geographic range outside of Illinois, of the great majority, is taken directly from Rydberg's *Flora of the Prairies and Plains of Central North America* (1932). In the case of plants not

included in that work, the statement of range has been compiled from Small's *Manual of the Southeastern Flora* (1933), and Britton & Brown's *Illustrated Flora of the Northern United States and Canada* (1913).

Short diagnostic descriptions are included for each of the species listed. In these, an attempt is made to bring out only the salient morphological features which serve to distinguish each plant. Statements of habitat have, for the most part, been compiled from information taken directly from herbarium labels of the specimens examined. The plan has been followed of citing one representative specimen from each of the counties in which a species has been collected. In a few cases, when a species is known from one or two counties, only, two or three specimens for each county may be cited. Maps accompanying each of the species are based exclusively upon specimens examined and identified by the writer. In no instance are published records of specimens used as a basis for mapping.

For the purposes of this study, the Leguminosae are considered to represent a single, large, but heterogeneous family. Its natural subdivisions are recognized as subfamilies. The key to subfamilies and the arrangement of genera follow in general the treatment by Taubert in Engler and Prantl's *Die Natürlichen Pflanzenfamilien* (III-3: 70-388, 1894). Genera of Subfamily Papilionoideae are separated by use of a key adapted from the key to the genera of Leguminosae in Jones' *Flora of Illinois* (1945: 158-160). All keys for identification of genera and species are essentially artificial, and are suitable only for use in distinguishing the leguminous plants of Illinois.

In Illinois, the Leguminosae represent nearly five per cent of the total number of species of native and naturalized vascular plants. They are the fourth family in size in the state, being surpassed in numbers only by the Compositae, Gramineae, and Cyperaceae. Here, as elsewhere, the leguminous plants are a conspicuous, and often striking

element of the flora, including some of the best known trees, shrubs, and herbs.

The writer recognizes ninety-seven species, in thirty-six genera, as being well established members of the spontaneous flora of the state. Of this number, twenty-four species, or approximately one-fourth, are naturalized plants, natives chiefly of Eurasia. Three species (*Baptisia tinctoria, Trifolium stoloniferum,* and *Amorpha nitens*) appear in brackets in the keys. They are discussed in the taxonomic treatment, but are not regarded as an integral part of the flora of Illinois at the present time.

In the construction of the keys, and in the taxonomic treatment, an attempt has been made to throw emphasis upon the species as the fundamental unit in plant taxonomy. Varieties have been purposely omitted from the keys, but are mentioned in the discussions of the related species. The writer considers that the present trend, in certain quarters, toward magnifying variations of species to the extent that they almost overshadow in importance the species themselves, is greatly to be deplored. Confusion in the basic concepts of species, and the cluttering of botanical literature with innumerable varieties and forms are certainly among the chief results of such a course of procedure. The writer prefers to consider a species as a distinct, but variable entity, within which several variations of less magnitude than the species itself may be observed. All such variations need not be given a Latin name, however.

No attempt is made to include all the named variations of any species. Only those are noted which have been specifically recorded as occurring in Illinois, or are found so frequently in the literature that failure to mention them would be attributed to ignorance or oversight. No new species, varieties, forms, or nomenclatural combinations are reported as a result of this study.

It is hoped that the accumulation of information of the

type resulting from this study will stimulate interest in this group of plants in Illinois. Further investigation may show that new names should be added to the list, and perhaps some stricken from it. Knowledge of the distribution of the Leguminosae in Illinois is very incomplete, for many of the one hundred two counties have not been explored botanically.

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VITA

The writer was born in Boulder, Colorado, on June 9, 1915, and attended the elementary schools of Puyallup, Washington, and Boulder, Colorado. After graduating from Boulder High School in 1932, he attended the University of Colorado, from which he secured the A. B. degree in 1936. During 1936-1937, he was a Fellow in Biology at the University of Colorado, receiving an A. M. degree in 1937. From 1937-1939, he was an Instructor in General Science in the Junior High School of Lamar, Colorado. During the years 1939-1942, the writer carried on graduate study in Botany, while serving as an Assistant in Botany at the University of Illinois. In June, 1942, he entered military service with the Army of the United States, and became a member of the 10th Medical Laboratory. In this organization, he served as a laboratory technician, and section chief. He saw foreign duty in the European Theater of Operations, from March, 1943, to November, 1945. The writer returned to the University of Illinois as a Fellow in Botany, in March, 1946, receiving the Ph. D. degree in Botany in June, 1947. In 1941, and again in 1946, he was an Instructor in Biology at the University of Colorado summer session. He has been appointed an Instructor in Botany for the summer session of the University of Illinois in 1947.

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